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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,291	02/13/2001	Jong Bum Na	EM/NA/6531	9466

7590 09/30/2003

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EXAMINER
CHEN, CHONGSHAN

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 09/30/2003 3

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/781,291	NA ET AL.	
	Examiner	Art Unit	
	Chongshan Chen	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Claims 1-11 are pending in this Office Action.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The abstract of the disclosure is objected to because:

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claim 1 is objected to because of the following informalities:

Incorrect use of period in the claims limitation. Should use comma instead of period after second and third limitations.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Berman et al. (Andrew P. Berman, Linda G. Shapiro; "Efficient Content-Based Retrieval: Experimental Results", Content-Based Access of Image and Video Libraries, 1999. (CBAIVL '99) Proceedings, IEEE Workshop on, 22 June 1999, Page(s): 55-61).

As per claim 1, Berman teaches an optimal high-speed multi-resolution retrieval method on a large capacity database comprising the steps of:

deriving the multi-resolution structure of a query "Q" (Berman, Fig. 1, page 1);

setting an initial minimum distance "d_{min}" to have the infinite value (Berman, page 1-2, FIDS allows the user to find approximate matches to query images using complex combinations of dozens of pre-defined distance measures ...);

setting respective values of "i" and "*l*" to be "1" (Berman, page 2);

deriving "d^{l} (Xi, Q) " (Berman, page 2, outputs a value for each database image corresponding to a lower bound on the distance between that image and the query image);

deriving "d^{L}(,Xi, Q)" (Berman, page 2); and

selecting data having a final value of "d_{min}" as the best match (Berman, page 2, outputs a value for each database image corresponding to a lower bound on the distance between that

image and the query image … to discard images that are shown to be too far from the query image to be a potential match).

As per claim 2, Berman teaches all the claimed subject matters as discussed in claim 1, and further teaches if "d^l (X_i, Q)" is more than "d_{min}", then removing the current candidate "X_i", and updating respective values of "i" and "*l*" with "i + 1" and "l" (Berman, page 3, if |c – d(Q, K_l)| is greater than t, … we can safely prune the search at node P); and if "d^l (Xi, Q)" is not more than "d_{min}", then updating "*l*" with "i + 1" (Berman, page 3, measure the distance from Q to every object in the leaf and return those objects I for which d(Q, I) is less than or equal to t …).

As per claim 3, Berman teaches all the claimed subject matters as discussed in claim 1, and further teaches wherein the step of deriving "$d^L(X_i, Q)$" comprises the steps of:

if "d^L (X_i, Q) " is more than "d_{min}", then removing the current candidate "X_i" (Berman, page 3, if |c – d(Q, K_l)| is greater than t, … we can safely prune the search at node P); and

if "d^L (X_i, Q)" is not more than "d_{min}", then updating "d_{min}" with "d^L (X_i, Q) ", and updating respective values of "i" and "*l*" with "i + 1" and "1" (Berman, page 3, measure the distance from Q to every object in the leaf and return those objects I for which d(Q, I) is less than or equal to t …).

As per claim 4, Berman teaches all the claimed subject matters as discussed in claim 1, and further teaches wherein the high-speed multi-resolution retrieval on the database is carried out using an inequality property expressed by the following expression:

$d(X,Y) \equiv d^L(X,Y) \geq d^{L-1}(X,y) \geq \ldots \geq d^l(X,Y) \geq \ldots \geq d^l(X,Y) \geq d^0(X,Y)$ (Berman, page 2).

As per claim 5, Berman teaches an optimal high-seed multi-resolution retrieval method using a cluster-based multi-resolution search algorithm adapted to output one best match, comprising the steps of:

performing a high-speed multi-resolution exhaustive search algorithm, thereby searching for a cluster "k_{min}" having a minimum distance "d'_{min}" (Berman, page 1);

setting an initial value of the: "d_{min}" to "d'_{min}", applying the high-speed multi-resolution exhaustive search algorithm to "Φ_{kmin}", thereby updating "d_{min}" match (page 2);

deriving "$d^{l}_{k}(C_k, Q) - \delta_k$" (Berman, page 2); and

selecting data having a final value of "d_{min}" is selected as the best match (Berman, page 2, outputs a value for each database image corresponding to a lower bound on the distance between that image and the query image … to discard images that are shown to be too far from the query image to be a potential match).

As per claim 6, Berman teaches all the claimed subject matters as discussed in claim 5, and further teaches wherein the high-speed multi-resolution retrieval using the cluster-based multi-resolution search algorithm is carried out using an inequality property expressed by the following expression: If $d^{l}_{k}(C_k, Q) - \delta_k > d_{min}$, then $X_i \sqsubseteq^{min} \Phi_k\ d(X_i, Q) > d_{min}$; Where, $l_k <= L$ (Berman, page 2).

As per claim 7, Berman teaches all the claimed subject matters as discussed in claim 5, and further teaches wherein " d_{min}" is updated with a value expressed by the following expression: $d_{min} = X_i \sqsubseteq^{min} \Phi_{kmin}\ d^{L}(X_i, Q)$; further comprising the steps of: setting "k" to "1"; and if $k = k_{min}$, updating "k" with "k + 1" (Berman, page 2-3).

As per claim 8, Berman teaches all the claimed subject matters as discussed in claim 5, and further teaches

if "$d'_k (C_k,Q) - \delta_k$ " is more than " d_{min} ", removing the cluster "k" (Berman, page 3, if |c – d(Q, K_l)| is greater than t, … we can safely prune the search at node P);

if "$d'_k (C_k,Q) - \delta_k$ " is not more than " d_{min} ", applying the high-speed multi-resolution exhaustive search algorithm to "Φ_k", thereby updating " d_{min} "; and updating "k" with "k + 1" (Berman, page 3, measure the distance from Q to every object in the leaf and return those objects I for which d(Q, I) is less than or equal to t …).

As per claim 9, Berman teaches an optimal high-speed multi-resolution retrieval method using a cluster-based multi-resolution search algorithm adapted to output a plurality of more-significant best matches, comprising the steps of:

performing a high-speed multi-resolution exhaustive search algorithm, thereby searching for a cluster "k_{min}" having a minimum distance "d'_{min}" (Berman, page 2, outputs a value for each database image corresponding to a lower bound on the distance between that image and the query image … to discard images that are shown to be too far from the query image to be a potential match);

if $n(\Phi_{kmin}) \geq M$, searching for M more-significant best matches in accordance with an algorithm modified from the high-speed multi-resolution exhaustive search algorithm to search for the M more-significant best matches, and storing respective distance values of the searched more-significant best matches "$d_{min}[.]$" (Berman, page 2);

setting "k" to "1", and if $k = k_{min}$, updating "k" with "k + 1" (Berman, page 2);

if $d^{l}_{k}(C_k, Q) - \delta_k > d_{min}[0]$, removing the cluster "k",and updating "k" with "k + 1" (Berman, page 3, if there is a node P at level l with value c such that $|c - d(Q,K_l)|>t$, then prune the search at node P …);

updating "$d_{min}[.]$" while applying the modified high-speed multi-resolution exhaustive search algorithm to "Φ_k", and updating "k" with "k + 1" (Berman, page 3);

setting "k" to "1", and if it is determined that the cluster "k" has been searched for, updating "k" with "k + 1" (Berman, page 3);

if $d^{l}_{k}(C_k, Q) - \delta_k > d_{min}[M - 1]$, removing the cluster "k", and updating "k" with "k + 1" (Berman, page 3);

updating "$d_{min}[.]$" while applying the modified high-speed multi-resolution exhaustive search algorithm to "Φ_k", and updating "k" with "k + 1" (Berman, page 4, Step 3: The system calculates the lower bound distances from the query image to each of the database images); and

selecting M data corresponding to a final "$d_{min}[.]$" as best matches, respectively (Berman, page 4, Step 4: The system returns the images with the smallest lower bound distances).

As per claim 10, Berman teaches all the claimed subject matters as discussed in claim 9, and further teaches wherein the high-speed multi-resolution retrieval using the cluster-based multi-resolution search algorithm is carried out using an inequality property expressed by the following expression: If $d(C_k, Q) - \delta_k > d_{min}[M-1]$, then $X_i^{min} \sqsubseteq \Phi_k\, d(X_i, Q) > d_{min}[M-1]$ (Berman, page 2).

As per claim 11, Berman teaches all the claimed subject matters as discussed in claim 9, and further teaches if $n(\Phi_{kmin}) < M$, filling $n(\Phi_{kmin})$ distance values in "d_{min} [.] " in the order of

higher values, starting from the lowest value, and storing the remaining elements of "$d_{min}[.]$" with the infinite value (Berman, page 2).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berman (Pub. No.: US 2002/0002550 A1) discloses process for enabling flexible and fast content-based retrieval.

Andrew P. Berman, Linda G. Shapiro; "A Flexible Image Database System for Content-Based Retrieval", Pattern Recognition, 1998. Proceedings. Fourteenth International Conference on, Volume: 1, 16-20 Aug. 1998, Pages (s): 894-898 vol. 1.

Krishnamachari, S.; Abdel-Mottaleb, M.; "Image browsing using hierarchical clustering", Computers and Communications, 1999. Proceedings. IEEE International Symposium on , 6-8 July 1999, Page(s): 301 -307.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chongshan Chen whose telephone number is (703) 305-8319. The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y Vu can be reached on (703)305-4393. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Chongshan Chen

SHAHID ALAM
PRIMARY EXAMINER